

CLAIMS

What is claimed is:

1. A process for separating oxygenated hydrocarbon from an olefin composition comprising:

contacting an oxygenate with a molecular sieve catalyst to form an olefin composition, wherein the olefin composition comprises olefin, water and oxygenated hydrocarbon;

cooling the olefin composition to form a liquid water containing stream and an olefin containing vapor stream, wherein the water containing stream comprises at least 1 wt % oxygenated hydrocarbon;

separating the water containing stream from the vapor stream;

compressing the vapor stream;

separating an olefin product stream and an oxygenated hydrocarbon containing stream from the compressed vapor stream;

combining the water containing stream and the oxygenated hydrocarbon containing stream; and

recovering oxygenated hydrocarbon product from the combined water containing stream and liquid oxygenated hydrocarbon containing stream.

2. The process of claim 1, further comprising separating the olefin product into an ethylene containing stream and a propylene containing stream.

3. The process of claim 2, further comprising polymerizing the ethylene containing stream.

4. The process of claim 2, further comprising polymerizing the propylene containing stream.

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5. The process of claim 1, wherein the water containing stream and the oxygenated hydrocarbon containing stream are first combined and then separated in a separator.
6. The process of claim 1, wherein the water containing stream and the oxygenated hydrocarbon containing stream are both combined and separated within a separator.
7. The process of claim 1, wherein the vapor stream is compressed at a pressure of at least 30 psia.
8. The process of claim 1, wherein the oxygenated hydrocarbon product contains not greater than 50 wt % water.
9. The process of claim 8, wherein the oxygenated hydrocarbon product contains not greater than 40 wt % water.
10. The process of claim 9, wherein the oxygenated hydrocarbon product contains not greater than 30 wt % water.
11. The process of claim 10, wherein the oxygenated hydrocarbon product contains not greater than 25 wt % water.
12. A hydrocarbon composition comprising:
not greater than about 50 wt % water,
at least 25 wt % (a), wherein:
(a) is a compound of Formula I
- $$\text{R—OH}$$
- Formula I
- wherein R is C₁ to C₅ alkyl;

and from about 10 ppm by weight to about 10 wt % of at least two compounds selected from the group consisting of (b), (c), (d), or a combination thereof, wherein:

(b) is a compound of Formula II



wherein R_1 is C_1 to C_4 alkyl and R_2 is C_1 to C_4 alkyl, wherein R_1 may be the same as or different than R_2 ;

(c) is a compound of Formula III



wherein R_3 is C_1 to C_3 alkyl and R_4 is C_1 to C_3 alkyl, wherein R_3 may be the same as or different than R_4 ; and

(d) is a compound of Formula IV



wherein R_5 is C_1 to C_5 alkyl.

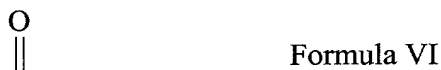
13. The composition of claim 11, further comprising from about 5 ppm by weight to about 5 wt % (e), (f), or a combination thereof, wherein:

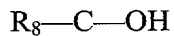
(e) is a compound of Formula V



wherein R_6 is C_1 to C_3 alkyl and R_7 is C_1 to C_3 alkyl, wherein R_6 may be the same as or different than R_7 ; and

(f) is a compound of Formula VI





wherein R_8 is C_1 to C_5 alkyl.

14. A composition comprising at least 15 wt % methanol; at least 10 ppm by weight dimethylether; at least about 10 ppm by weight acetone, butanone, acetaldehyde, propanal, butanal or a combination thereof; and not greater than 50 wt % water.

15. A composition comprising at least 20 wt % methanol, from 10 ppm by weight to 10 wt % dimethylether, from 10 ppm by weight to 10 wt % propanal, from 10 ppm by weight to 10 wt % butanone, and not greater than 50 wt % water.

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